Annual Report

FOREST PEST CONDITIONS IN WISCONSIN

1962

WISCONSIN CONSERVATION DEPARTMENT

FOREST MANAGEMENT DIVISION

FOREST PESTS — SURVEY AND CONTROL

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A N N U A L R E P O R T

FOREST PEST CONDITIONS

IN

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INTRODUCTION

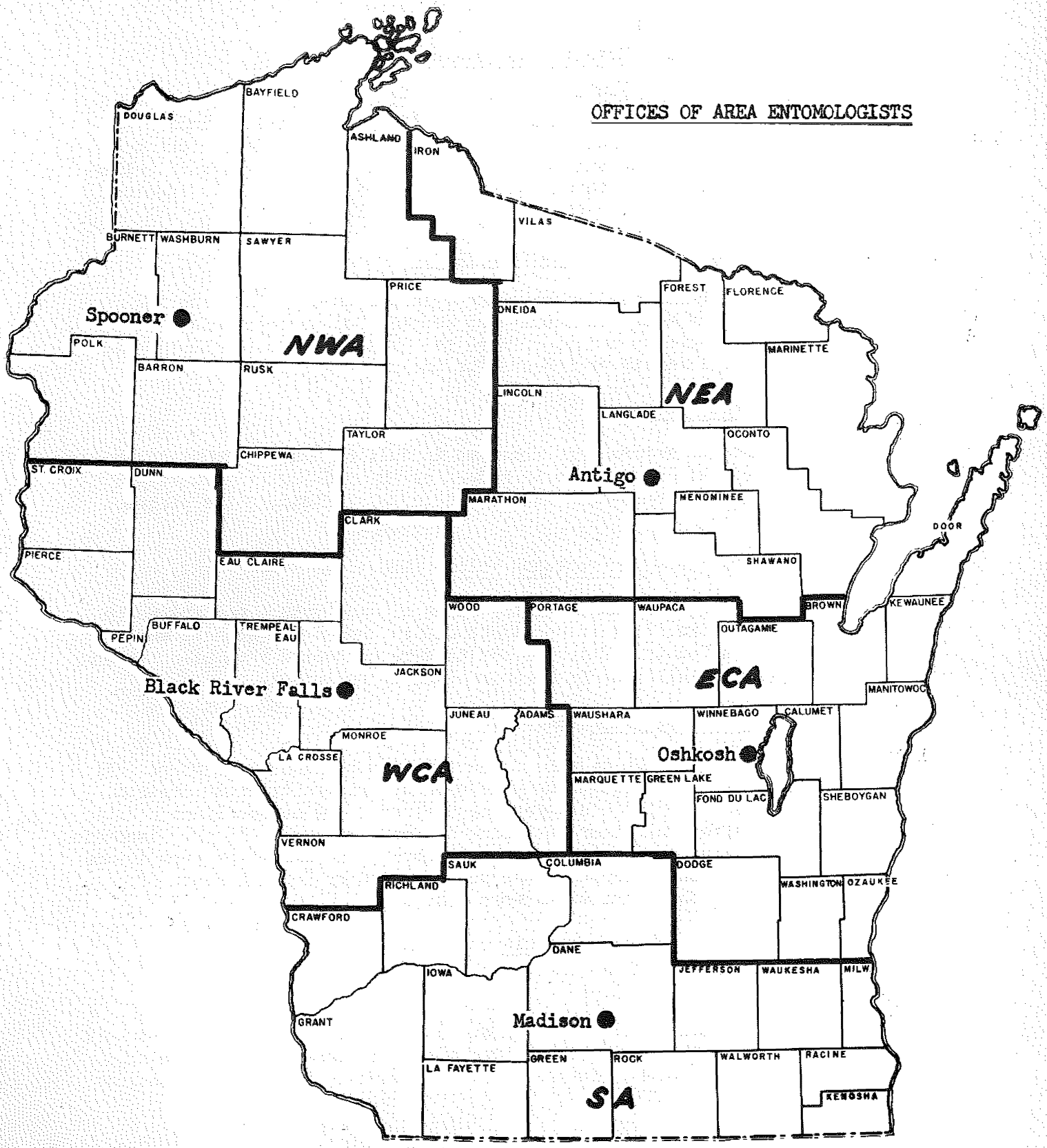
Parasitic and predacious insects, birds, disease organisms, and favorable growing conditions were some of the factors which played an important part in holding troublesome forest pests in check during 1962. The effectiveness of natural control factors was illustrated in the decline of the jack pine budworm in widespread localities, the reduction of the red-humped mapleworm to endemic numbers, the disappearance of a locally severe pine bark beetle problem, and the low acreage of severe Saratoga spittlebug infestation.

Chemical control of the pine tussock moth was limited to selected stands after intensive study of the problem area in Bayfield and Douglas Counties. Knapsack mistblowers were used to treat critical spots in a few plantations infested with Saratoga spittlebug.

The accomplishment of survey and control tasks during the year was made easier by the cooperation of many individuals representing several agencies. Observers contributed to keeping the general forest pest situation in focus through their reporting. Personnel from the Department, University, U. S. Forest Service, counties, forest industry, and others provided valuable assistance with the work done on the pine tussock moth problem including evaluation, insecticide testing, the control operation and its evaluation.

The distribution and importance of forest pathogens received closer attention in the over-all effort to minimize timber losses from living organisms. Problems associated with the establishment of new plantings were studied, particularly the use of herbicides in controlling competition.

The following report is a summary of survey and control information derived chiefly from the annual reports and other records submitted by the area entomologists and forest pathologist.


OFFICES OF AREA ENTOMOLOGISTS
BAYFIELD
DOUGLAS
ASHLAND
IRON
VILAS
BURNETT
WASHBURN
SAWYER
PRICE
FOREST
FLORENCE
ONEIDA
Spooner
POLK
NWA
MARINETTE
BARRON
RUSK
LINCOLN
NEA
LANGLADE
TAYLOR
OCONTO
CHIPPEWA
ST. CROIX
DUNN
Antigo
MARATHON
MENOMINEE
DOOR
CLARK
PIERCE
EAU CLAIRE
SHAWANO
WOOD
PORTAGE
WAUPACA
BROWN
KEWAUNEE
PEPIN
BUFFALO
TREMPEALEAU
OUTAGAMIE
ECA
JACKSON
Black River Falls
MANITOWOC
JUNEAU
ADAMS
WAUSHARA
WINNEBAGO
CALUMET
MONROE
LA CROSSE
WCA
Oshkosh
MARQUETTE
GREEN LAKE
FOND DU LAC
SHEBOYGAN
VERNON
SAUK
COLUMBIA
DODGE
WASHINGTON
OZAUKEE
RICHLAND
CRAWFORD
DANE
IOWA
JEFFERSON
WAUKESHA
MILW.
GRANT
Madison
LA FAYETTE
GREEN
ROCK
WALWORTH
RACINE
SA
KENOSHA

FOREST PEST CONDITIONS IN WISCONSIN

COLEOPTERA

Strawberry Root Weevil - Brachyrhinus ovatus (Linnaeus)

Seedling black spruce and balsam fir were girdled early in the season, or late in the previous fall at Ripco Nursery (Oneida County) as indicated by callus tissue formation around the injuries. Patches of dead trees two to three square feet in size and scattered individual dead trees with yellowed and dried tops were apparent throughout the seedbeds of the above species. Adult beetles were numerous in the nursery on July 17.

Twice-Stabbed Lady Beetle - Chilocorus stigma (Say)

Larvae of this beneficial species and a larger unidentified species were numerous in a few Waushara County and Waupaca County locations. It was reported that some property owners sprayed the insects without bothering to inquire about their identity or reasons for their presence.

Wood Borers - Cerambycidae

Adult roundheaded borers were observed in July on Douglas County jack pine which had been killed by fire in mid-June. By mid-August sawdust was accumulating in piles around the bases of the trees indicating the presence of the larvae.

Red Turpentine Beetle - Dendroctonus valens (LeConte)

Pitch tubes were numerous about the bases of many mature red and white pines following a spring fire in Menominee County, and a few attacks were observed in Waupaca County. Pairs of adults were collected from pitch tubes and eggs observed in galleries in Menominee County on June 19.

Pales Weevil - Hylobius pales (Herbst)

Specimens of weevil adults were collected from two locations where they had caused damage. Identifications were made by university entomologists. Near Necedah (Juneau County) adult feeding destroyed 30% of seedlings planted in a small field after volunteer jack pine had been removed. In the Wisconsin Rapids vicinity, larvae were very active in Scotch pine Christmas tree stumps and roots, and twigs on remaining trees were damaged by feeding scars of adults to the extent that some trees were unsalable.

Root Collar Weevil - Hylobius radicis Buchanan

NORTHWEST AREA

The insect is still active in area stands, but few new infestations were reported. Some Scotch pine Christmas tree plantings were beginning to show mortality in Washburn and Douglas Counties. Previously infested plantations continue to show new mortality.

NORTHEAST AREA

Severe attacks were reported on Scotch pine on light sandy soils in Shawano County. Some tree mortality was observed in red pine windbreaks in parts of Marinette and Oconto Counties.

WEST CENTRAL AREA

Losses attributable to the weevil continued in Christmas tree plantations and windbreaks, especially where Scotch pine is a major component of the stand. The weevil is building up in previously isolated Scotch pine plantations in Trempealeau and Buffalo Counties. Scotch pine is to be harvested for pulpwood from approximately two miles of infested red and Scotch pine windbreaks in Buffalo County. Adams, Eau Claire, Jackson, Juneau, Wood, and La Crosse were other counties reporting weevil activity.

EAST CENTRAL AREA

Infestations in sandy areas have diminished in intensity largely because of the destruction of susceptible trees by the weevil. Mortality was high in Scotch pine and red pine growing in association with it or in the vicinity. Populations appear to be rising where reproduction has been allowed to develop in infested stands. Use of lindane in attempts to control the weevil has met with apparent success in two of three plantations treated. The time lapse since treatment of the third has not been sufficient to permit final evaluation.

Pine Root Weevil - Hylobius rhizophagus n. sp.

This weevil mentioned in the 1960 and 1961 annual reports as an unidentified root-tip-feeding weevil has been indentified by university entomologists. The insect has caused considerable tree mortality in some stands and new infestations were reported in the Northwest Area. Attempts to collect adults with "tanglefoot" traps were unsuccessful.

New infestations were also found in Eau Claire, Jackson, and Juneau Counties in 1962.

Native Elm Bark Beetle - Hylurgopinus rufipes (Eichhoff)

Larvae and adults of the beetle were observed in slash and roadside cuttings of elm in Menominee County. Beetle galleries were most numerous in old slash in the bottomland hardwood type which was predominantly elm. Larvae and adults were found in slash in Winnebago, Outagamie, and Waupaca Counties, but were not as numerous as the smaller European elm bark beetle.

Oak Twig Pruner - Hypermallus villosus (Fabricius)

Relatively heavy pruning of oaks, attributed erroneously by some property owners to squirrels, was reported from Green Lake, Marquette, Waushara, Monroe, Winnebago, and Trempealeau Counties.

Pine Bark Beetles - Ips sp.

NORTHWEST AREA

Populations appeared to be endemic throughout the area. The outbreak around the Mosinee yard area in Douglas County has collapsed and no new tree mortality appeared during the season. Moderate bark beetle populations did appear, however, in pines severely defoliated by the pine tussock moth in 1961.

NORTHEAST AREA

A fire on April 26, 1962, in Menominee County weakened and killed jack pine which was subsequently heavily attacked by bark beetles. Undamaged trees along the periphery of the burn were lightly infested. Eggs, larvae, and adults were observed in galleries on June 19.

WEST CENTRAL AREA

Bark beetle activity was less than in 1960 and 1961. In Jackson County stands where snow-breakage in the November, 1961 storm provided ample ideal breeding sites, there was less damage to living trees than in previous years.

Bark beetles continued attacks in the Wood County jack pine plantation in which thinning experiments were initiated in 1961 and in similar stands in the vicinity. Thirty additional acres were thinned early in 1962. Stands thinned in 1961 and 1962 appeared to have suffered less mortality during the season than unthinned plots.

EAST CENTRAL AREA

Ips pini (Say) and Pityogenes hopkinsi Sw. were abundant in white pine apparently injured by blister rust infections. "Checkered beetles" (Family: Cleridae) which are predacious on bark beetles were found in association with them on the trees.

Locust Borer - Megacyllene robiniae (Forster)

Populations were locally high in Waupaca, Waushara, and Marquette Counties.

May Beetles - Phyllophaga sp.

No reports of serious white grub problems were received from any part of the state, although heavy flights of adults were reported from some localities in east and west central counties. A heavy emergence of Phyllophaga fusca occurred in Barron County on May 2. Numerous adults of Cotalpa lanigera (Goldsmith beetle) were just under the soil surface ready to emerge in Dunn County on May 11 (T30N R12W, S17, NE SE). Heavy flights occurred in Langlade and Barron Counties on May 15. A few oaks were severely defoliated in the Town of Rolling (Langlade County), and spotty defoliation of deciduous trees on farm lands was reported from the East Central Area. Many planters in high hazard areas are protecting trees from grub damage by insecticide treatment applied as part of the planting operation. Where beetle flights were heavy in 1962 damage by grubs may occur in some 1963 plantings.

White Pine Weevil - Pissodes strobi (Peck)

NORTHWEST AREA

Populations were generally low, averaging 2 to 3 per cent in areas checked.

NORTHEAST AREA

The weevil was of concern mostly to Christmas tree growers. Planting of hundreds of acres of Scotch pine, which is highly susceptible to weevil attack, continues. In one planting 21% of the Scotch pines were infested.

Several growers have had good results from treating Scotch and white pine with DDT and a sticker applied with knapsack compression sprayers. Weevil control trials in a 20-acre Marathon County white pine planting were made using a mixture of 5% DDT emulsifiable concentrate and 1% aroclor sticker applied with a knapsack mistblower. A late summer check of the area disclosed that 1% of the treated trees had become infested compared to 17% in the untreated check area.

WEST CENTRAL AREA

Damage caused by the weevil in 1962 was somewhat less than that of the previous year. Infestations ranged from 20 to 30 per cent of the trees in open stands and plantations in Clark, Eau Claire, Jackson, and Wood Counties. Attacks averaged from 10 to 15 per cent in central and southwestern counties in the area.

Evaluation of previous control projects was continued and some small trial and demonstration projects were completed.

The 34-acre Jackson County plantation first treated in 1959, and resprayed in 1961, showed striking height growth when compared with nearby untreated stands. Treated trees have grown from 6' to 8' during the interim and average 12' to 18' in height. Untreated trees of the same age are 8' to 15' tall and a majority of them have crooked stems. Areas treated with lindane-aroclor (1961) averaged 7% infestation in 1962, an increase of about 2% over 1961. Areas treated with lead arsenate sprays (1961) were 45% infested, an increase of about 22% over 1961. A total of 1,135 white pines were treated in a small area in the Tuttle School Forest (Jackson County) in late May of 1961, with lindane-aroclor mixture. By 1962, 20% of the trees were reinfested demonstrating the futility of treating only part of an infested stand.

A series of weevil control plots were established in a Clark County plantation to test the effectiveness of DDT at various concentrations with and without spreader-stickers and to compare these with lindane with and without spreader-stickers. Applications made on April 16, 1962, included: lindane ½% with Aroclor ½%; lindane ½% with Plyac, and lindane ½% only; DDT (1.5%, 0.5%, 0.25%) with and without Plyac. On May 18, 1962, similar plots were established using lindane ½% with Aroclor; lindane ½% with Plyac, and DDT 1.5% with Plyac. Plots were about one-half acre in size.

When treatments were evaluated all of the April 16 applications had effectively controlled the weevil. Infestations in treated areas ranged from none (DDT 1.5%) to 1.3% (lindane ½% with Plyac) while in check areas infestations ranged from 10 to 17 per cent. May 18 applications with lindane held infestations down to 2% but on the DDT plot 6% of the trees were infested. None of the combinations with Aroclor or Plyac demonstrated any added effectiveness. Use of spreader-stickers with DDT or lindane would probably be important if spray applications were to be made well in advance of weevil emergence.

The weevil control tests indicated that both lindane and DDT are effective when terminals are treated before the insects become active in the spring. After activity starts lindane appears to be more effective since it kills the weevil embryos and larvae.

A demonstration control project involving treatment of 2,500 trees in the Osseo School Forest (Trempealeau County) resulted in 90% control.

EAST CENTRAL AREA

Weevil populations were variable throughout the area ranging from less than 3% current infestation to 40%. Previously treated trees show a low incidence of attack. In some plantations the cumulative attack has involved nearly 100% of the trees.

Clipping and destruction of infested white pine leaders was continued at the Wild Rose Hatchery (Waushara County). Current attacks have been held to less than 3%.

Notes: Beetles were observed on white pine in Langlade and Waupaca Counties on April 26. Damage to leaders of white and jack pine was becoming apparent in Langlade and Marinette Counties on July 6.

Smaller European Elm Bark Beetle - Scolytus multistriatus (Marsham)

The beetle is commonly found in Appleton and other municipalities to the south and in roadside wood lots, particularly those affected by drastic changes in the water table. Evidence that woodpeckers had been feeding on the insects was conspicuous in localities with high beetle populations.

Beetles began emerging about May 15 in Milwaukee County. The spring flight of beetles was over by June 20.

DIPTERA

Balsam Gall Midge - Cecidomyia balsamicola Lintner

Detection surveys indicated that this insect is present in most balsam fir stands in the state. It is a serious problem to Christmas tree growers in the Northeast Area where young plantings in Lincoln, Oneida, Marinette, and Langlade Counties have been damaged. Heavy infestations commonly occur in small patches within a stand. Attempts to control the pest within the gall, or after it has dropped to the duff, have met with little success.

Notes: Larvae were observed in needle galls and in the duff on November 14, and collected from needles in Langlade and Marinette Counties on December 3 when there was a foot of snow on the ground.

Red Pine Needle Midge - Thecodiplosis piniresinosae

Populations were low in all areas. In a few Dunn and Pepin County plantations some red pine lost 10 to 30 per cent of the current needles.

Pitch Midge on Jack Pine -

Midge populations were high in most Northwest Area jack pine stands. Twig mortality was conspicuous, particularly on young stands and reproduction in some localities in Douglas County.

HEMIPTERA

Pine Tortoise Scale - Toumeyella numismaticum (Pettit & McDaniel)

Outbreaks in two Polk County plantations collapsed due to natural controls, but not before considerable tree mortality occurred, which was attributable in part to previous infestation by the black pine leaf scale (Aspidiotus californicus Coleman). Severe localized recent infestations were found in plantations and natural stands in Douglas and Bayfield Counties. The heaviest and most extensive infestation occurred within and adjoining the 1962 pine tussock moth control area. Scattered infested trees elsewhere in these two counties appeared to be more numerous than in 1961.

Heavy infestations in the Town of Commonwealth (Florence County) were widely distributed and consisted of small groups of infested trees.

Light infestations were reported in the Town of Stephenson (Marinette County) and in Menominee County.

Notes: - June 18 Crawlers observed on new growth (Jackson County).
- July 11 The number of lady beetles present in the Polk County plantations was considerably greater than in 1961.

Saratoga Spittlebug - Aphrophora saratogensis (Fitch)

More than sixteen thousand acres of susceptible jack and red pine plantings were checked in Northeast Area surveys. Knapsack mistblowers were used to successfully treat 115 acres of "hot spots" in 350 acres of plantations in Marinette and Oneida Counties which ordinarily would have been treated by aerial application of insecticide. A 6% DDT-in-oil solution was used (1/2 lb. per acre). State and county forestry personnel cooperated on the project. Post-control surveys indicated this method of control to be satisfactory on small acreages, although it is difficult work.

In other parts of the state little flagging, due to spittlebug feeding, was observed. A large majority of the survey plots on 4,500 acres of red pine plantings in the Northwest Area failed to reveal a single nymph.

Notes: May 16 - Some of the spittlebug eggs had hatched in Lincoln County.
June 19 - 2nd and 3rd instar nymphs predominant in Langlade County.
June 25 - Nymphs mostly in the 3rd instar in Northeast Area counties.
June 27 - Most nymphs in final instar in Clark County.
July 9 - In Langlade County the following instars were represented in the percentages indicated: 3rd - 4%; 4th - 16%; 5th - 80%.
July 17 - Adult emergence 95% complete in Oneida County.
August 3- Oviposition occurring in Oneida County.

HYMENOPTERA

Introduced Pine Sawfly - Diprion similis (Hartig)

First generation sawflies were scarce in the northern and central counties. Defoliation by second generation larvae was noticeable in parts of Polk and Burnett Counties, and on open growing trees in parts of Dunn, Jackson, Trempealeau, and Wood Counties.

The sawfly has now been observed in all Northeast Area counties. New observations in the West Central Area were made at Wildcat Mountain State Park (Vernon County), Tomah (Monroe County), Wisconsin Rapids (Wood County).

Red-Headed Pine Sawfly - Neodiprion lecontei (Fitch)

No serious infestations were reported. Widely dispersed small colonies were observed in most counties. Reports of activity were received from Barron, Burnett, Chippewa, and Washburn Counties in the Northwest Area; Oneida and Shawano Counties in the Northeast Area; Trempealeau and Juneau Counties in the West Central Area; and Door County in the East Central Area.

Notes: Last instar larvae were collected at Griffith State Nursery on July 12.

Second instar larvae were collected from jack pine near Monico (Oneida County) on July 17. Fifth instar larvae were collected from jack and red pine near Mattoon (Shawano County) on August 1.

Red Pine Sawfly - Neodiprion nanulus nanulus Schedl

A 2-acre red pine plantation in Columbia County (T11N R9E, S13, SW SE$\frac{1}{4}$) was severely defoliated in the spring. Cocoons collected from the duff on June 22 were heavily parasitized by minute wasps. Except for the absence of the previous year's needles the trees appeared to be in good condition by fall.

A few scattered colonies were reported from Douglas and Washburn Counties, and several colonies were observed in Waushara County but no significant defoliation was reported. Newly hatched larvae were observed on jack pine in Washburn County on May 18. Cocooning was beginning in east central counties by June 12.

White Pine Sawfly - Neodiprion pinetum (Norton)

A few white pine shelterbelt and ornamental trees were defoliated in Buffalo, La Crosse, and Vernon Counties. Third and fourth instar larvae were observed on white pine in Dane County (Middleton) on July 5. First generation larvae from Buffalo County cocooned between July 13 and 16. Larvae from La Crosse County cocooned between August 2 and 13. Larvae from Vernon County had cocooned by October 5. Second instar larvae were observed in Dane County the first week in September.

Larch Sawfly - Pristophora erichsonii (Hartig)

NORTHWEST AREA

No stands showed heavy defoliation in 1962. Some trees had heavy oviposition injury, but larval colonies contained very few individuals.

NORTHEAST AREA

Populations were generally low in northeastern counties. Only a few scattered stands were moderately defoliated in Langlade, Oneida, and Marinette Counties. Oviposition was observed in Langlade County on June 12.

WEST CENTRAL AREA

Sawfly populations were lower than they have been for several years. Defoliation on survey plots observed annually was estimated at 30% of available foliage where it had been 80% in 1961. Predation on cocoons by mice and other organisms appeared to be an important factor in the population decline.

EAST CENTRAL AREA

High initial populations were observed in some localities but a sharp reduction occurred. Red-winged blackbirds were observed feeding on the larvae. Only light defoliation was observed.

Horntail - Xiphydria maculata (Say)

Large numbers of horntails were observed ovipositing on dead and dying hard maples near Big Lake in Vilas County on June 14. Eggs were observed under the bark from the ground line up into the crowns in branches as small as an inch in diameter. The trees were in a coppice-growth stand which had been defoliated severely for two successive years by the red-humped mapleworm. Mature horntail larvae were observed in these trees on August 29.

LEPIDOPTERA

Large Aspen Tortrix - Archips conflictana (Walker)

Although defoliation was still apparent in Price and Rusk Counties, it was more spotty and less severe than it has been in the last three years.

Defoliation of aspen in scattered stands in Eau Claire, Clark, and Wood Counties, presumably by the tortrix, appeared to be more severe than it has been in recent years.

The tortrix was abundant in small localized infestations in the east central counties.

Notes: May 18 - Defoliation was severe on clumps of small trees but less discernible on large trees; larvae were $\frac{1}{4}$ to $\frac{1}{2}$ inch long in Rusk and Price Counties.

Birch Skeletonizer - Buccalatrix canadensisella Chambers

Defoliation was observed in most white birch stands across Langlade, Oneida, Forest, and Marinette Counties and was 90% complete in some stands by the end of August. A 60-acre stand near Birch Lake in Forest County sustained 100% defoliation.

Defoliation in west central counties dropped from 1961 levels and was insignificant.

Notes: September 5 - Mature larvae were blooming and pupation was about 50% complete in Forest County.

Larch Casebearer - Coleophora laricella (Hubner)

Populations appeared to have increased slightly over 1961 levels in some Shawano and Langlade County stands when spring larval collections were made.

Jack Pine Budworm - Choristoneura pinus (Freeman)

NORTHWEST AREA

Egg mass surveys in July, 1961, and overwintering larval counts during the ensuing winter months indicated budworm populations would be endemic in 1962. Early larval surveys in the spring of 1962 revealed high populations in several localities in Polk, Burnett, and Washburn Counties, but as the season progressed parasites, particularly Apanteles sp., took a heavy toll. Late larval counts showed a drastic reduction in budworm numbers and the presence of many Apanteles cocoons. Pupal collections indicated that 60% of the pupae were destroyed by parasites, mainly Itoplectis conquisitor (Say).

Egg mass surveys during July and August, 1962, produced only 10 egg masses on more than a hundred plots in the jack pine type. Available survey information indicates the budworm will not present a major control problem in 1963.

NORTHEAST AREA

Light infestations were observed in the Land O' Lakes area of Vilas County and in the southeastern part of Menominee County. A moderate to heavy infestation occurred on approximately 4,000 acres in the Town of Stephenson, Marinette County. This infestation collapsed as a result of heavy parasitism and predation. The most important parasites were Itoplectis conquisitor (Say) and an unidentified fly which together destroyed about 75% of the pupae collected for observation. Apanteles sp. were also active in the infested areas. Predation was chiefly by a big brown pentatomid which fed on the larvae and by red ants which fed on larvae and pupae.

WEST CENTRAL AREA

High egg mass counts in the summer of 1961 and early larval counts in the spring of 1962 indicated that the budworm might be a serious problem in central Wisconsin jack pine stands. However, by the time larvae had reached the fourth instar parasites and predators had reduced the populations to noncritical levels, and their effective work continued through the late larval and pupal stages. Apanteles sp. were found in all larval surveys, and Itoplectis conquisitor (Say) emerged from approximately 25% of late instar larvae and pupae collected. Many pupae contained mummified remains of the budworm. Predation by pentatomids was also observed.

Light to moderate defoliation was sustained in parts of the Black River State Forest and on Jackson County forest lands, on Central Wisconsin Conservation Area lands in Jackson, Juneau, and Monroe Counties in the vicinity of Mather, and in west central Adams County.

Egg mass counts in 1962 were lower than in 1961. With continued parasitism and predation no serious problems are anticipated in 1963.

EAST CENTRAL AREA

Larvae were found throughout the area but not in damaging numbers. Highest populations were found in Waushara County.

Notes:
- May 14 - 2nd instar larvae were observed feeding in Polk and Burnett Counties.
- May 19 - Larvae, mostly 2nd instar, were feeding on shoots and flowers in Douglas and Washburn Counties; some pollen had been shed. Larvae in Bayfield County were just starting to feed.
- May 29 - Most larvae were in the 3rd and 4th instars in Jackson, Wood, and Adams Counties. Some 5th instar larvae were observed in the south end of Adams County and in Juneau County.
- June 12 - Larvae ranged from 2nd to 4th instars and the first Apanteles cocoons of the season were observed in Burnett County. Larvae were mostly in the 5th and 6th instars in Adams and Jackson Counties, and a few pupae were found in Adams, Monroe, and Jackson Counties.

June 19 - Larval development ranged from 3rd instar to the season's first pupae in Polk and Burnett Counties. Pupation was nearly complete in Jackson County.
June 22 - Larvae were in the 3rd to 6th instar in Marinette County. Moth emergence and a few eggs were observed in Portage, Waushara, and Marquette Counties.
June 25 - Moths started emerging from pupae collected in Jackson and Monroe Counties.
June 29 - Pupation was nearly complete in Eau Claire County. About 25% of the larvae had pupated in Marinette County.
July 6 - Dipterous parasites from Marinette County larvae were pupating.
July 13 - Moth emergence and presence of eggs on foliage noted in Juneau County.
July 15 - Pupation completed in all northwest counties.
August 7 - First eggs of the season found in Marinette County.

Pine Tussock Moth - Dasychira plagiata (Walker)

The tussock moth was studied in the field and in the laboratory to provide information pertinent to arriving at a control decision. Investigations were made of the following: the biology of the insect including overwintering habits and natural controlling factors, distribution of larvae on individual trees in various size classes and in various categories of infestation, past and current damage in relation to tussock moth populations, and possible future damage to stands.

Collections of overwintering larvae were made at regular intervals to observe them for parasitism and to obtain life-cycle information. A fungus found on dead larvae under bark scales in the field during the fall and winter months was identified as Paecilomyces sp. Although it killed larvae in laboratory cultures the fungus did not appear to be a virulent pathogen. It was not observed in the field during the summer of 1962. The remains of many late instar larvae with Apanteles sp. cocoons attached were found during the winter months in a localized area which appeared to be the oldest part of the infestation. Parasites did not appear in the large numbers of larvae reared at the laboratory and only occasionally did parasitic wasps appear in collections of twigs and bark scales. In late May, 1962, a few cocoons of Meteorus sp. were found in some infested plantations. Parasites of all stages of the tussock moth appeared in increasing numbers in some locations as the summer progressed.

Larvae collected in the field during the winter months completed development in six to seven weeks under greenhouse conditions. The time lapse between cocooning and moth emergence was about two weeks. Eggs hatched in 12 to 14 days. A random collection of 200 cocoons from mass-reared overwintering larvae produced 60% male moths and 40% females. A previous sample of 20 cocoons produced males and females in the same ratio.

Survival of many tussock moth larvae in areas treated with DDT for budworm control in 1961 led to checking several compounds in order to select one for possible use in a control operation in the spring of 1962. Laboratory tests indicated that DDT, Sevin, Methoxychlor, and Bacillus thuringiensis

Berliner (a microbial insecticide) were all effective against various instars of the tussock moth. Test larvae were placed on foliage which had previously been dipped in commonly used spray mixtures and then air dried. Young larvae were killed most readily. B. thuringiensis looked promising and warrants field testing.

Department pest control personnel cooperating with university entomologists conducted field tests of the chemicals mentioned above plus a systemic insecticide, Phosphamidon. Replicated treatments were made on small plantation trees using Kiekens Model 75M knapsack mistblowers to apply the chemicals on May 25. Larval mortality was evaluated at 1, 2, 3, 7, and 13 days after treatment. DDT was superior to the other materials tested and was approved for use in the control operation tentatively planned for early June.

Continuous larval checks throughout the infested area gave no indication that tussock moth populations would drop below critical levels before serious additional damage would be inflicted on infested stands. Treatment of previously selected stands was started on June 3. Two Ford trimotors, under Federal contract, but under temporary control of the state, sprayed 13,140 acres of county and private lands by June 8. Ground control of spray aircraft was provided by forest management personnel, and a Department observation plane manned by division personnel continuously monitored the operation from the air. The observation plane was in radio contact with ground crews and the spray planes. Spray deposit checks and evaluation of control were conducted by university entomologists. Chemical control was excellent reaching 96% after seven days and 98% after thirteen days. Parasites and predators which survived in the treated areas took an additional toll of remaining larvae.

Fish and game management personnel were kept informed on the progress of the project. Adverse effects on wildlife were not observed on trips made into treated blocks during and after the spraying. A brook of sharptails was raised successfully in a treated block. Tree swallows in the area raised a brood of young, and there was no apparent harm done to kingbirds, brown thrashers, chipping sparrows, chickadees, crows, red squirrels, deer, and porcupines. Dragonflies, bumblebees, various flies, and butterflies were still active in a spray block two days after treatment although a few dead Lucanids and ground beetles (Calosoma callidum) were found in open areas along roadways. Lakes and streams were avoided by spray aircraft.

Costs of the chemical and its application were shared by the Federal Government, the state and landowners as shown on page 16.

Potential trouble spots in Douglas and Bayfield Counties, totalling about 9,000 acres, are under surveillance to determine the course of action in 1963. A light infestation in Marinette County (Town of Stephenson), found during routine budworm surveys, is also under observation.

Notes:
- May 1 - First feeding-larvae observed in Douglas-Bayfield County area. About 10% of the larvae were active.
- May 4 - Approximately 80% of the larvae were active in Douglas-Bayfield County area.
- May 6 - All larvae observed in the Douglas-Bayfield County area were moving about and doing some feeding. Feeding was observed when the air temperature was as low as 60° F.
- May 18 - Instars ranged from 2nd to 5th with 3rd instar predominant in Douglas-Bayfield Counties.

PINE TUSSOCK MOTH CONTROL - 1962

Cost Summary

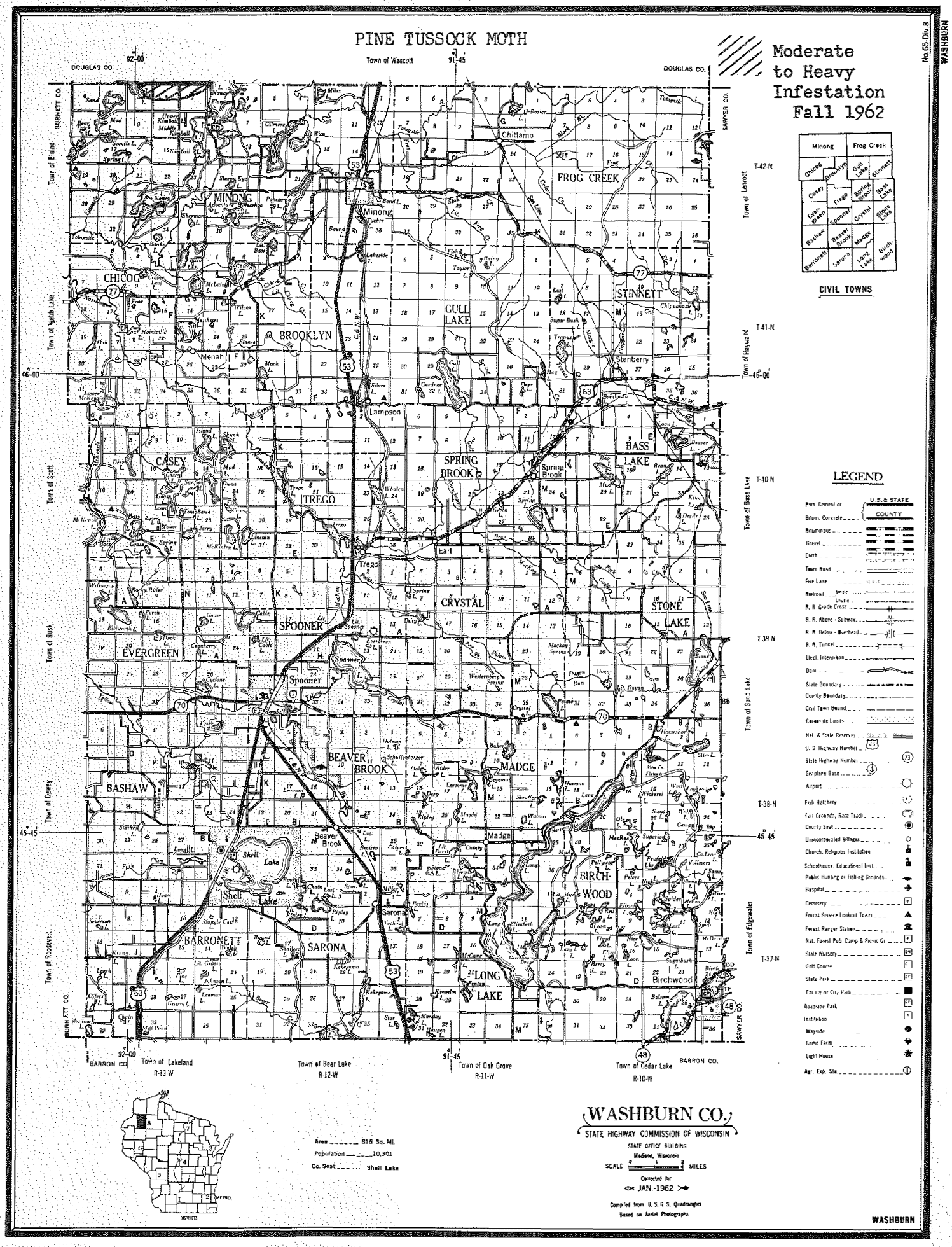
Cost of Application and Insecticide:

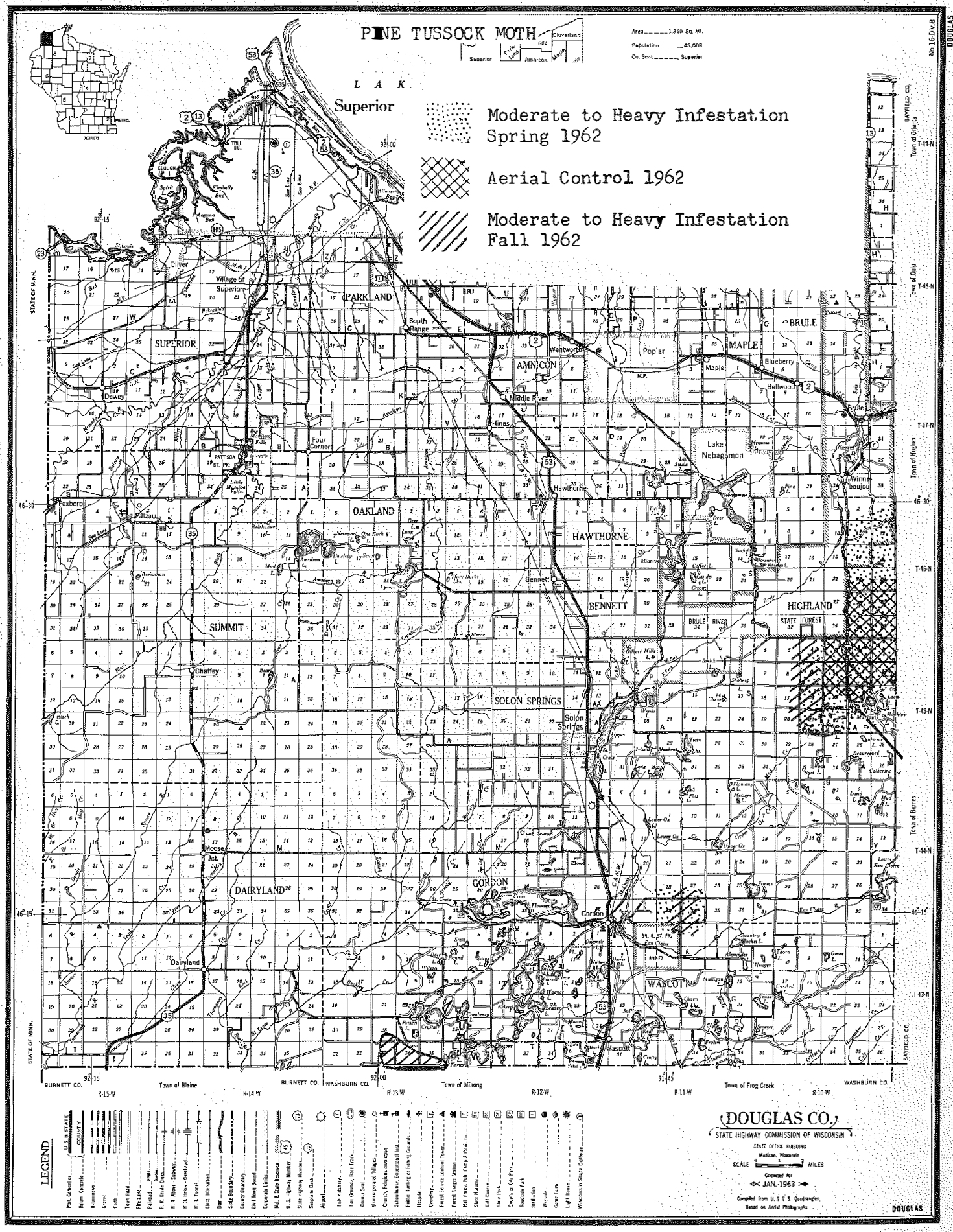
Ownership	Acres Treated	Cost of Application @ $.598/A	Actual Gallons Applied	Adjusted Gallons*= Actual + 1%	Cost of Insecticide @ $.48/gal.	Total Cost Application and Insecticide
Mosinee Paper Co.	7,499	$4,484.40	7,514.2	7,589.3	$3,642.86	$ 8,127.26
Bayfield Co.	5,340	3,193.32	5,348.0	5,401.5	2,592.72	5,786.04
Small private (3)	301	180.00	300.0	303.0	145.44	325.44
Totals	13,140	$7,857.72	13,162.2	13,293.8	$6,381.02	$14,238.74

* Actual gallonage applied was increased 1% to allow for loss in handling insecticide.

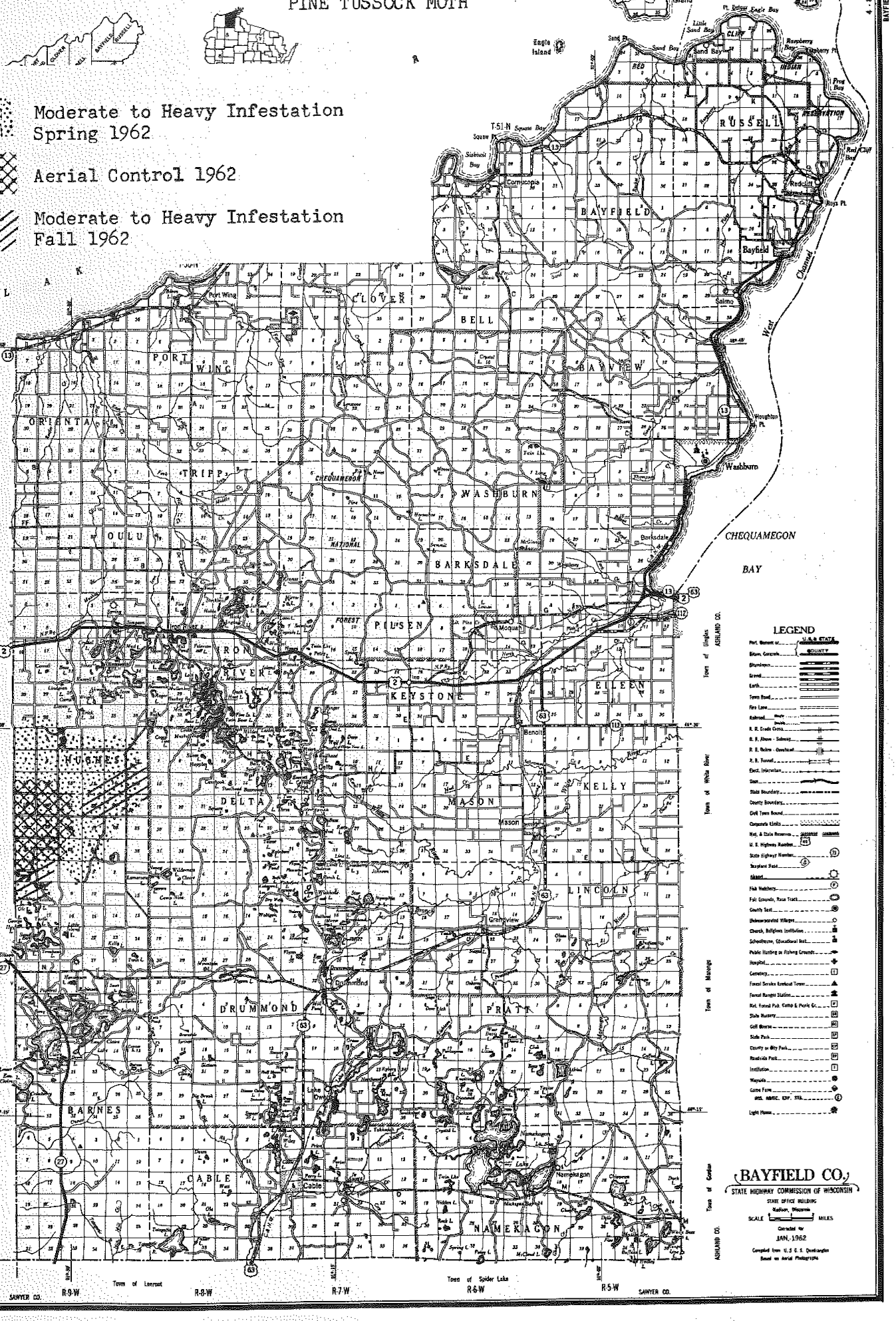
Cost Sharing by Program Participants:

Participant and Share	Ownership Treated	Cost of Application @ $.598/A	Cost to Participant	Cost of Insecticide @ $.48/gal.	Cost to Participant	Total Cost
U.S.F.S. (25%)	Mosinee	$1,121.10		$ 910.72		
	Bayfield Co.	798.33		648.18		
	Sm. Private	45.00		36.36		
			$1,964.43		$1,595.26	$ 3,559.69
W.C.D. (37½% + cost on first 160A and 160 gal.)	Mosinee	$1,777.33		$1,442.87		
	Bayfield Co.	1,293.17		1,049.07		
	Sm. Private	135.00		109.08		
			$3,205.50		$2,601.02	$ 5,806.52
(37½% - cost on first 160A and 160 gal.)						
Mosinee			$1,585.97		$1,289.27	$ 2,875.24
Bayfield Co.			1,101.82		895.47	1,997.29
Sm. Private			---		---	---
TOTAL COSTS			$7,857.72		$6,381.02	$14,238.74


PINE TUSSOCK MOTH
Moderate to Heavy Infestation Fall 1962
No.65-Div.8
WASHBURN
Town of Wascott
DOUGLAS CO.
BURNETT CO.
SAWYER CO.
Town of Blaine
Town of Webb Lake
Town of Scott
Town of Rusk
Town of Doyle
Town of Rossvelt
Town of Lenroot
Town of Hayward
Town of Bass Lake
Town of Sand Lake
Town of Edgewater
T-42-N
T-41-N
T-40-N
T-39-N
T-38-N
T-37-N
92-00
91-45
46-00
45-45
Chittamo
FROG CREEK
MINONG
Minong
CHICOG
BROOKLYN
Menahi
GULL LAKE
STINNETT
Stanberry
Lampson
BASS LAKE
CASEY
SPRING BROOK
Spring Brook
TREGO
Trego
Earl
CRYSTAL
STONE LAKE
SPOONER
Spooner
EVERGREEN
BEAVER BROOK
MADGE
Madge
BASHAW
Beaver Brook
Shell Lake
BIRCH-WOOD
Birchwood
SARONA
BARRONETT
LONG LAKE
Town of Lakeland R-13-W
Town of Bear Lake R-12-W
Town of Oak Grove R-11-W
Town of Cedar Lake R-10-W
BARRON CO.
Minong
Frog Creek
Chicog
Brooklyn
Gull Lake
Stinnett
Casey
Trego
Spring Brook
Bass Lake
Evergreen
Spooner
Crystal
Stone Lake
Bashaw
Beaver Brook
Madge
Birchwood
Barronett
Sarona
Long Lake
CIVIL TOWNS
LEGEND
U.S. & STATE
COUNTY
Port. Cement or
Bitum. Concrete
Bituminous
Gravel
Earth
Town Road
Five Lane
Railroad
R. R. Grade Cross
R. R. Above - Subway
R. R. Below - Overhead
R. R. Tunnel
Elect. Interurban
Dam
State Boundary
County Boundary
Civil Town Bound.
Corporate Limits
Nat. & State Reserves
U. S. Highway Number
State Highway Number
Seaplane Base
Airport
Fish Hatchery
Fair Grounds, Race Track
County Seat
Unincorporated Villages
Church, Religious Institution
Schoolhouse, Educational Inst.
Public Hunting or Fishing Grounds
Hospital
Cemetery
Forest Service Lookout Tower
Forest Ranger Station
Nat. Forest Pub. Camp & Picnic Gr.
State Nursery
Golf Course
State Park
County or City Park
Roadside Park
Institution
Wayside
Game Farm
Light House
Agr. Exp. Sta.
WASHBURN CO.
STATE HIGHWAY COMMISSION OF WISCONSIN
STATE OFFICE BUILDING
Madison, Wisconsin
SCALE 0 1 2 MILES
Corrected for
JAN.-1962
Compiled from U. S. G. S. Quadrangles
Based on Aerial Photographs
Area 816 Sq. Mi.
Population 10,301
Co. Seat Shell Lake
WASHBURN


PINE TUSSOCK MOTH
Area 1,810 Sq. Mi.
Population 45,008
Co. Seat Superior
Moderate to Heavy Infestation
Spring 1962
Aerial Control 1962
Moderate to Heavy Infestation
Fall 1962
Lake Superior
Superior
Oliver
Village of Superior
PARKLAND
South Range
SUPERIOR
Wentworth
Poplar
MAPLE
BRULE
AMNICON
Maple
Blueberry
Bellwood
Middle River
Hines
Four Corner
Lake Nebagamon
Hawthorne
Foxboro
Patzau
OAKLAND
HAWTHORNE
Bennett
BENNETT
HIGHLAND
STATE FOREST
BRULE RIVER
SUMMIT
Chaffey
SOLON SPRINGS
Solon Springs
Moose Jct.
DAIRYLAND
Dairyland
GORDON
Gordon
WASCOTT
Wascott
DOUGLAS CO.
STATE HIGHWAY COMMISSION OF WISCONSIN
STATE OFFICE BUILDING
Madison, Wisconsin
SCALE 1 MILES
Corrected for
JAN. 1963
Compiled from U. S. G. S. Quadrangles
Based on Aerial Photographs
LEGEND
BURNETT CO.
Town of Blaine
BURNETT CO.
WASHBURN CO.
Town of Minong
Town of Frog Creek
WASHBURN CO.
BAYFIELD CO.
Town of Oliila
Town of Hughes
Town of Barnes
STATE OF MINN.
R-15-W
R-14 W
R-13 W
R-12 W
R-11-W
R-10-W
T-49-N
T-48-N
T-47-N
T-46-N
T-45-N
T-44-N
T-43-N
46°-30
46°-15
92°-15
92°-00
91°-45

PINE TUSSOCK MOTH



May 25 - 3rd and 4th instars predominant in insecticide test area.
July 6 - Pupation about 60% completed in Douglas-Bayfield Counties. 5th and 6th instar larvae, pupae, and eggs were observed in Marinette County.
July 25 - Pupation was virtually complete; a few moths and eggs noted in Douglas-Bayfield County area. Moth emergence started about July 20 and was completed by August 10.

Zimmerman Pine Moth - Dioryctria zimmermani (Grote)

Damage was more prevalent in Northwest Area stands than previously. Shoot damage to red pine plantations was very noticeable. Heavy infestations in stem galls in jack pine resulted in breakage or death of numerous trees in plantations.

The insect continued to be a problem in some West Central Area Christmas tree plantings and was reported in some forest stands, but fewer reports were received than in previous years. Chemical treatment, as proven effective in Michigan tests, was tried on a Wood County planting. The application of a mixture of 3 pounds of actual DDT in 100 gallons of water was applied to approximately 700 Scotch pines (1/2 acre) on April 24, as a stem-drench. When an evaluation was made on June 20, evidence was found indicating the presence of active larvae on 4% of the treated trees and on 11% of adjacent untreated trees. Apparently 7% (70+ trees per acre) were protected adequately from the larvae for the season.

Reports of damage, most from Waushara County, are increasing. Incidence of attack appears to be associated with increased volume of sheared Scotch pine in the East Central Area. Larvae observed in the Fox River area the first week in July were heavily parasitized.

Notes: May 29 - A moth caught in a Madison black light trap.

Forest Tent Caterpillar - Malacosoma disstria (Hubner)

Larvae were not reported by any of the observers, nor were any old or new egg masses found in overwintering egg surveys in the northern counties. The situation remains the same as in 1961 -- good.

European Pine Shoot Moth - Rhyacionia buoliana (Schiff.)

No new areas of infestation were reported in the East Central Area or elsewhere. The most severe infestations have been in the Point Beach State Forest (Manitowoc County). Trees in the park area which had been supporting high shoot moth populations were pruned in 1959, and although they are still misshapen they have grown considerably. Current infestation levels have not approached the high ones which existed prior to 1959, and appear to be somewhat lower than those of last year.

Notes: June 29 - Pupation was underway in East Central Area counties.

Red-Humped Mapleworm - Symmerista leucitys Francelmont
(Previously listed as S. albifrons (J. E. Smith)

Populations were sharply reduced in all 1961 outbreak areas. Some defoliation was apparent on scattered individual trees in Rusk, Sawyer, and Bayfield Counties. A light population was observed in the vicinity of Big Lake in Vilas County. A few small colonies of larvae were all that remained in the Iron County outbreak area.

Dipterous parasites destroyed 85% of Langlade County larvae collected from an area of light defoliation. A spring examination of Vilas County pupae disclosed that many were mummified or had been attacked by a fungus, Cordyceps sp., which had also been observed in the field the previous fall. A large brown pentatomid was noted feeding on young larvae in Vilas County in August.

Permanent plots established in the Big Lake outbreak area in 1961 were examined twice during the season. Mortality to suppressed one to four-inch hard maple trees was high and dead and dying trees were under attack by a horntail, Xiphydria maculata (Say). Root systems of the trees were infected by the fungus, Armillaria mellea. The coppice trees were also heavily infected with Eutypella canker and were generally of poor quality.

Notes: Eggs were deposited on the underside of maple leaves the last week in July.

First and second instar larvae have black heads and the anal hump is not apparent.

Larvae fed until pupation occurred early in October.

Fall and Spring Cankerworms - Alsophila pometaria (Harris) and
Paleacrita vernata (Peck)

Reports of cankerworm activity were received from Waukesha, Jefferson, Walworth, Dane, Columbia, Marquette, Eau Claire, and Dunn Counties. Defoliation ranged from light to complete in infested localities. Host plants on which defoliation was observed included elm, aspen, oak, box elder, basswood, cherry, and raspberry. Catalpa, soft maple, and sumac apparently were not palatable.

Moths were caught in a Middleton (Dane County) light trap the week ending April 20. Larvae were in the 1st to 3rd instar in Waukesha County on May 15, and were near mature in Columbia and Marquette Counties by May 30. Most larvae had pupated by June 6. Reflushing of defoliated trees was well underway in an area mapped in Columbia County on June 20 (Town of Lewiston, T13N R8E, parts of several sections).

Maple Blight Associates - Acleris chalybeana (Fernald)
Sparganothis acerivorana (McKay)
Tetralopha sp. near asperatella

Insects associated previously with the maple blight problem were observed in endemic numbers in northern hardwood stands.

NEUROPTERA

Mantispid - Mantispa interrupta Say

Specimens collected in scrub oak stands in Portage and Waushara Counties were identified by O. S. Flint of the U. S. National Museum. This predacious insect is not frequently observed in the field.

ORTHOPTERA

Walkingstick - Diapheromera femorata (Say)

Defoliation was not as severe or as extensive in Marinette County oak stands as anticipated from egg counts and numbers of nymphs observed early in the season. Although early nymphal populations were high in the Towns of Beaver and Stephenson defoliation sustained was only light to moderate in most stands by fall. The total area of all noticeable defoliation in these towns was about half that of 1960, a year when defoliation was very severe.

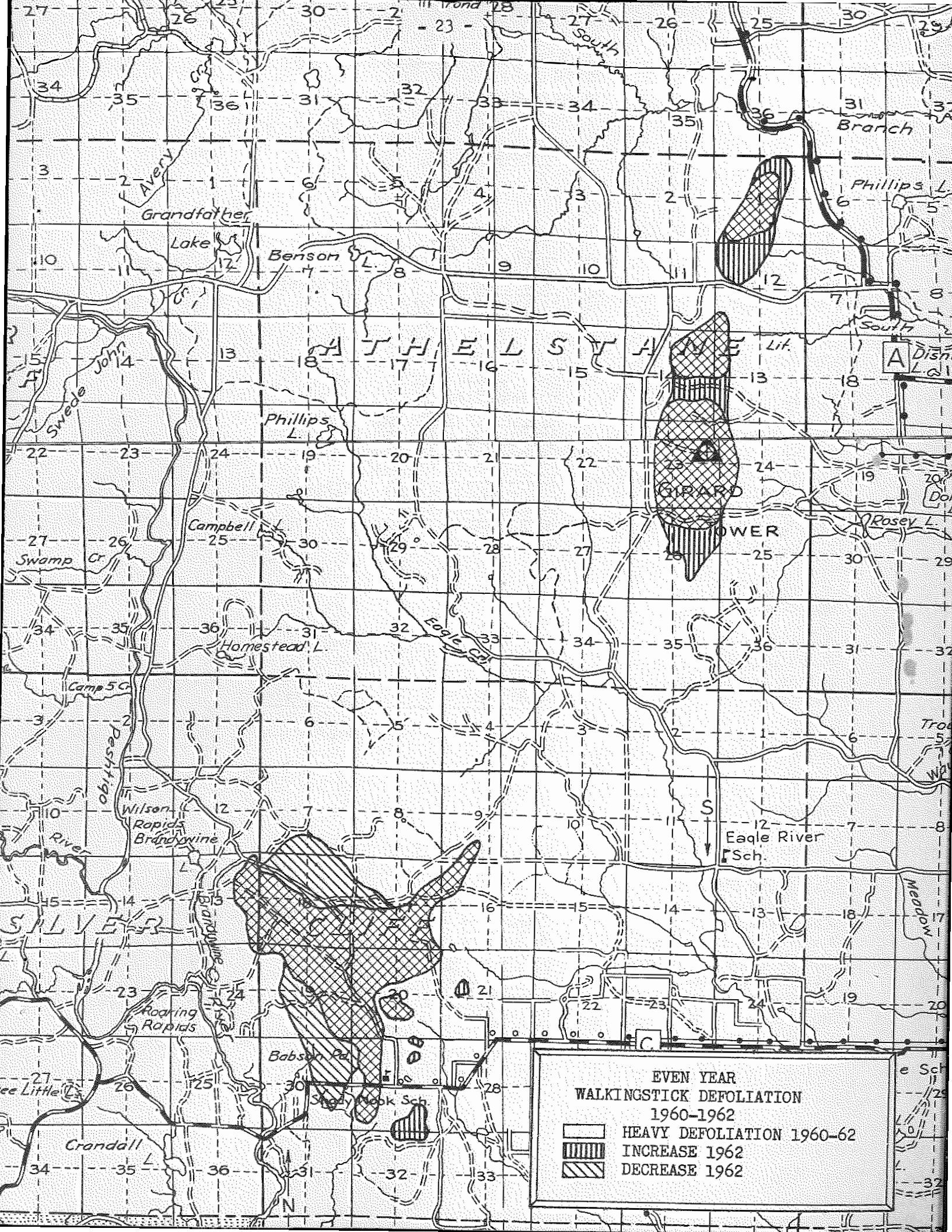
Defoliation in the Town of Silver Cliff and in the vicinity of the Girard Tower, however, was complete, but the boundaries of the defoliated areas did not extend much beyond the 1960 boundaries. During a period of one month high populations of walkingsticks were found to have moved five chains out beyond the old boundaries of the infestation while the zone of complete defoliation moved out only about three chains before the season ended. Collections of eggs from traps indicated that high populations and possible severe defoliation could be expected in the Silver Cliff and Girard Tower infestations again in 1964. (Map on page 23.)

A public meeting was held in the Town Hall in Crivitz on the evening of July 5. Approaches to control of the walkingstick problem were discussed including blanket chemical control of the entire area and the difficulties associated with such a program. In the opinion of a small minority of those in attendance, this was the only solution regardless of the consequences or of the cost.

An Eau Claire County infestation, under observation for several years, caused only moderate defoliation where it had been severe in 1960. Endemic populations were observed in Jackson and Adams Counties.

In Waushara County a number of people reported observing walkingsticks on their land for the first time. A small area, not exceeding five acres and growing unthrifty black locust, was defoliated (T20N R8E, S22, SE$\frac{1}{4}$).

Notes:
- June 13 - First nymphs of the season (1st and 2nd instar) observed in Town of Stephenson, Marinette County.
- August 10 - First oviposition reported; many paired walkingsticks (Marinette County).
- August 27 - Peak of oviposition in Marinette County as determined from egg-trap collections.
- October 4 - Oviposition still continuing in Marinette County after several frosts had occurred. Oak leaves were reddened and browning. A pale green 3rd instar nymph was collected. Adult females brought into the greenhouse succumbed after laying only a few eggs.


EVEN YEAR
WALKINGSTICK DEFOLIATION
1960-1962
HEAVY DEFOLIATION 1960-62
INCREASE 1962
DECREASE 1962
ATHELSTANE
GIRARD
POWER
Eagle River
Sch.
Phillips L.
Benson L.
Grandfather Lake
Avery Cr.
John Swede Cr.
Campbell Swamp Cr.
Homestead L.
Eagle Cr.
Camp 5 Cr.
Wilson Rapids
Brandywine River
Roaring Rapids
Babson Pd.
Shady Nook Sch.
Crandall L.
Rosey L.
Meadow
Phillips L.
Lif.
Dish
Trou
Wh
e Sch
e Little L.
A
C
N
S

OTHER INSECTS REPORTED

Common Name	Scientific Name	Area (s)
COLEOPTERA		
Bronze Birch Borer	Agrilus anxius (Gory)	NW, NE, EC
Elm Leaf Beetle	Gallerucella luteola (Muller)	NW
Powder Post Beetle	Lyctus sp.	NW, NE, EC
Locust Borer	Megacyllene robiniae (Forster)	NE, S
Poplar Borer	Saperda calcarata (Say)	NE
HEMIPTERA		
Cicada	unidentified	NE
Pine Spittlebug	Aphrophora parallela (Say)	All
Black Pine Leaf Scale	Aspidiotus californicus Coleman	NW
Spruce Gall Aphid	Chermes abietis (Linnaeus)	NE
White Pine Aphid	Cinara strobi (Fitch)	NE, WC
Pine Needle Scale	Phenacaspis pinifoliae (Fitch)	All
Spruce Bud Scale	Physokermes piceae (Schrank)	EC
Pine Bark Aphid	Pineus strobi (Hartig)	All
Willow Aphids	unidentified	WC, EC
HYMENOPTERA		
Dusky Birch Sawfly	Croesus latitarsus Norton	NE, EC, S
Birch Leaf Miner	Fenusa pusilla (Lepeletier)	WC
Balsam Fir Sawfly	Neodiprion abietis (Harris)	NE, WC
Jack Pine Sawfly	Neodiprion americanus banksianae Rohwer	NE
Swaine Jack Pine Sawfly	Neodiprion swainei Middleton	WC, S
Yellow-Headed Spruce Sawfly	Pikonema alaskensis (Rohwer)	NE
LEPIDOPTERA		
Walnut Caterpillar	Datana integerrima Grote & Robinson	S
Jack Pine Shoot Borer	Eucosma sonomana Kearfott	NW, NE, WC
Pine Needle Miner	Exoteleia pinifoliella (Chambers)	EC
Fall Webworm	Hyphantria cunea (Drury)	EC, S
Eastern Tent Caterpillar	Malacosoma americanum (Fabricius)	NW, EC, S
Mourning-Cloak Butterfly	Nymphalis antiopa Linnaeus	NE, WC, S
Pitch Blister Moth	Petrova albicapitana (Busck)	NW, NE
Larch Case Bearer	Pristophora erichsonii (Hartig)	NW, EC, S
Red-Humped Oakworm	Symmerista canicosta Francelmont (previously listed as S. albicosta)	NE
Pine Webworm	Tetralopha robustella Zeller	NW,
Bagworm (on red cedar)	Thyridipteryx sp.	EC

MAJOR FOREST DISEASES REPORTED

WILTS AND DIEBACKS

Oak Wilt - *Ceratocystis faracerum* (Bretz) Hunt

Oak wilt pockets continued to spread on pin and black oak sites, with pockets enlarging 1-2 tree depths per year. Many new pockets were reported in Waupaca County, while new infection centers were limited in extreme southern counties. Damage in the central Wisconsin area was confined to poor timber sites and recreational areas.

Experimental Vapam barrier strips were established in 1962 to check the spread of oak wilt near Lake Geneva in Walworth County and in Nelson Dewey Park in Grant County.

Oak Dieback - (Unknown)

Reports of oak twig and branch mortality in Sawyer and Burnett Counties from unknown causes.

Dutch Elm Disease - *Ceratocystis ulmi* (Buisman) Moreau

This disease is increasing in the southeastern counties. Efforts are being made to utilize killed trees whenever possible. Surveys in the northern part of the state indicate the disease spread may be minimized because of scattered distribution of elm in these areas.

In cooperation with the University of Wisconsin, Vapam barrier strips were established in Janesville and Waukesha to prevent disease spread through root grafts. Additional work will be conducted in 1963.

ROOT AND BUTT ROTS

Nursery Root Rot - *Cylindrocladium scoparium* Morgan

This disease was detected at Griffith State Nursery. The unusually heavy transplant losses at some state nurseries indicate *C. scoparium* may be a factor in tree mortality. Beds treated with fumigants such as methyl bromide and Mylone have had better survival and growth than untreated beds. The University of Wisconsin is investigating the importance of *C. scoparium* as a factor in transplant loss.

Shoestring Root Rot - *Armillaria mellea* Vahl. ex Fr.

This disease continues to kill individual and small groups of pine throughout the state. Affected eastern hemlock sawtimber trees in Menominee County that were declining last year are now dead. Mycelial fans and rhizomorphs were observed as high as 8 feet from the ground.

Notes: Sporophores were first observed on August 22 in Walworth County at the base of oak wilt killed trees. On September 21 fruiting bodies were beginning to develop at the base of 7-year-old red pines in Sauk County. Fruiting bodies were at their maximum development in Perrot Park on Oct. 1. Most of the sporophores ceased growing and began to decompose by Oct. 12 in the Southern Area.

Spongy White Butt Rot - Armillaria mellea Vahl. ex Fr.

This fungus continued to be observed as a major butt decay in hardwoods in Wisconsin. The decay was found in coppice maple stands in Vilas County that were defoliated by the red-humped mapleworm. Silver maple and elm along the Wisconsin River was commonly infected, especially in trees bearing fire scars.

TRUNK ROTS

Soft White Trunk Rot of Oak - Fomes everhartii (Ell. & Gall.) v. Sch.

This commonly observed oak decay was also detected in river birch in Dane County. Inspection of a logging operation in Columbia County indicated an average decay column seven feet above and below the conk.

Spongy White Trunk Rot - Polyporus hispidus (Bull.) Fr.

Sporophores of this fungus were observed on black ash in Adams County while surrounding northern pin oaks were not infected.

Piped Rot - Polyporus dryophilus Berk.

Sporophores of this fungus were observed on bur oak in Dane County on July 25.

Sap Rot of Elm - Collybia velutipes Fr.

This fungus was commonly observed causing a sap rot of American elm in the East Central Area, especially in areas where the water table had been altered.

Notes: Sporophores were fruiting abundantly on one-year-old slash in Menominee County on November 13.

STEM AND BRANCH DISEASES

White Pine Blister Rust - Cronartium ribicola Fischer

Phytoactin plots established in 1961 were examined in 1962. It was too early to evaluate the effects of treatments on the cankers.

Strumella Canker - Strumella coryneoidea Sacc. & Wint.

Strumella canker, which is not common in Wisconsin, was reported on black oak in Dane and Columbia Counties.

Hypoxylon Canker - Hypoxylon pruinatum (Kl.) Cke.

Reports indicate a high incidence of hypoxylon canker in Bayfield, Douglas, Langlade and Oneida Counties. Loss from this disease appears to be due to an oversupply of aspen and the failure to harvest at the optimum time.

FOLIAGE DISEASES

Anthracnose - Gnomonia sp.

Symptoms on sycamore and white oak were less severe than in 1960 and 1961. Their severity ratings for the past three years are 1960 - heavy; 1961 - moderate; 1962 - very light.

White Pine Needle Blight - (Atomospheric oxidant, probably Ozone)

More than 50% of the trees in a 10-acre Green County plantation were affected when observed on July 24. Blighted trees were smaller and less vigorous than unblighted trees.

Needle Droop - (Rapid transpiration and limited water availability)

Needle droop was reported on white pine in scattered areas throughout the state. White pine Christmas tree quality was reduced because of this disease in a Waupaca County plantation. Drooping needles were most commonly observed on branches facing south and west.

Pine Needle Rust - Coleosporium solidaginis (Schw.) Thuem.

This disease has been commonly observed on red and jack pine in 25 Wisconsin counties. Presently the locations and dates of aecial fruiting are being recorded by Department foresters. The data will be made available to the University of Wisconsin and the Lake States Forest Experiment Station for use in an epidemiological study.

Notes: 1960-62 aecial production ranged from May 17 through July 18. Maximum aecial formation occurred the last week in May and first week in June.

OTHER DISEASES REPORTED

Host	Fungus
Catalpa	Verticillium albo-atrum Reinke & Berth
Elm	Gnomonia ulmea (Schw. ex Fr.)
Jack Pine	Cronartium cerebrum Hedge. & Long.
Red Cedar	Gymnosporangium juniperi - virginianae Schw.
Spruce	Cytospora sp.
Sugar Maple	Eutypella parasitica Dav. & Lor.